

# Choice of information system for Russian companies

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**Abstract.** The relevance of work is caused by the importance of an integrated approach to automating the business processes of organizations. Understanding the relevance of the problem came to Russia with some delay, in comparison with the West. Recently the interest in information technologies, which are inseparably linked with a concept of an information system of the corporate level and capable to provide effective management of the entity, has grown. Also the modern models of information technologies allow one to put into practice methods of the game theory by means of which it is possible to count and predict important results and on its basis to make the right management decision. The purpose of this work was to choose an optimal information system and to research efficiency of its application for the pharmaceutical company Pharmstandard. Mathematical and marketing methods were used during the research. The choice of a certain corporate information system and calculation of efficiency of its usage and a payback period are the result of the work. Results of the conducted research can be used by the specialists of various industrial enterprises for development of the competitive activities in the sphere of strategic planning.

## 1. Introduction

An integrated approach to automating the business processes of organizations is an important part to achieve efficiency. Business processes automation has appeared in Russia later than in the West. Interest in information technology is growing. Information technology can provide business management. Modern models of information technologies can calculate and evaluate the result and make on its basis the right management decision. The subject of this work serves as a corporate information system in the Russian company. The subject of the study is the choice of an information system for Russian enterprises. The aim of this work is to select the optimal information system and to investigate its effectiveness for a pharmaceutical company "Pharmstandard".

## 2. Materials and methods

The present time can be characterized as an era of creation of information civilization, which was born by development of information and computer technologies.

Usage of information technologies in economics and management makes it possible to present a form suitable for practical usage, a concentrated expression of scientific knowledge and practical experience for the implementation and organization of social processes. At the same time, economy of work costs, time and other material resources is supposed as necessary one for implementation of these processes. Therefore information technologies play an important strategic role [2].

Information technologies make economically important decisions and are directly involved in the process of effective management of activities. Modern models of information technologies allowed



counting and predicting an economically important result and on its basis to accept the right managerial decision. These models perform calculation of aggregate economic effect, risks and flexibility of system indicators [3].

Information and computer technologies and computer facilities of the last generations allowed one to put into practice a set of the methods described earlier in the paper or by the simplest examples (for example, the game theory)[4]. Accumulating and storage of information create a new and very extensive information base apart from the development of information systems of computer handling, which possibly will be an incitement to create new, earlier unknown methods of search and decision making in economy [5].

The Information System (IS) of enterprise management is the central nervous system of the organization. It comprises all standard reference information, all data on activities of the entity, financial, analytical and accounting records [6].

For this research, the pharmaceutical company PJSC Pharmstandard, in particular the plant of medicines of JSC Pharmstandard-UFAVITA, has been chosen.

PJSC Pharmstandard is the leading company in Russia, which is engaged in development and production of the modern, high-quality, available medicines, meeting requirements of health care and expectations of patients.

All production capacities of the company meet completely the requirements of the Russian standards. The management of the company has approved the program for transition of the plants to the European GMP standards that reveal the need in implementation of a corporate information system [7], which:

A) According to application there are corporate IS, all main divisions of the entity comprise as a rule a considerable number of functional modules. This is their benefit as they allow one to pass the complex problem resolution to automation of the entity. However the special complexity of their implementation is shown here also as the staff of one division is inevitably subjected to the dependence on correct and timely work of staff of other divisions. Implementation of the systems of similar level shall be followed by large-scale preparatory work, reengineering of business processes of the entity, change of a corporate culture, organizational changes [8].

B) When orientating the solvable tasks IS is treated on the basis of manufacturing standards, and more specifically – the ERP system where enterprise resource planning is considered as the difficult complex task which is covering both problems of optimum distribution of business resources and providing the fast and effective goods delivery and services to the consumer [9].

The ERP standard (Enterprise Resource Planning) is enterprise resource planning which allows one to unite all resources of the entity, thus, adding features on accounting of other costs of the entity, order management, finance [10]. ERP is a technology of production process optimization from the point of view of the production for the commercial and financial purposes. A main objective of optimization of production organization and enterprise management is the maximum level of service for consumers, the minimum investments in fixed assets and effective work of the entity from the point of view of the low cost level [11].

ERP systems of resource planning of production enterprise are the integrated information systems of automation of enterprise management processes. ERP systems unite finance control, handlings of orders, planning of material and other resources and also management functions by production – everything what is required for business [12]. The methodology of ERP contains the following elements: material requirement planning (MRP), capacity requirements planning (CRP), requirement planning in financial resources (FRP) [13].

C) According to the option of development there are systems designed and developed by the companies- software manufacturers. These are the companies specializing in creation of such systems and for which the designing process and developments of IS are their core business.

Advantages of such kinds of systems are in their professional development, usage of the best previous experience of implementation (so-called best practice), lack (minimization) of errors in

programming, updating and development of systems with development of the best practices of operation and implementation of this kind of IS.

Disadvantages are in the complexity and high costs, the need to pay for functions which, perhaps, will never be required, possible absence in standard option of necessary functions delivery [14].

D) According to the temporary characteristic of an object the static system is treated, in which the condition of a subject using the system doesn't change eventually, and IS doesn't change respectively.

ERP actually provides systematization of all data and allows one to determine opportunities for enhancement, to estimate result of efforts and to minimize losses. IS provides the accuracy of assessment of labor costs and also helps to minimize warehouse stocks and work in progress, allows one to track most effectively a product in its lifecycle and also gives the chance to determine timely various losses [15].

The business processes pledged in IS and realized within a common information space reduce difficulties of management and increase the speed and quality of reaction to the changing situations, providing thereby cost reduction and the best customer service quality [16].

Possibilities of the ERP system in automation of production planning processes allow one to smooth working process and to provide uniform loading of lines and sites processing. Especially it is important in case of the fluctuation of demand in the products and in case of availability in a combination of order portfolio as long as large contracts and small short-term orders are in force. Planning tools provide proper calculation and determine the time of purchases for timely delivery of necessary goods and materials [17].

### 3. Research of information systems opportunities

In the course of studying of information systems classifications corresponding to a research subject three information systems (table 1) were revealed: SAP/R3, "BAAN", "Oracle E-Business Suite".

**Table 1.** Description of the information systems characteristics

<b>Characteristics</b> To whom it is addressed	<b>SAP/R3</b> for medium and large enterprises	<b>BAAN</b> for medium and large enterprises	<b>Oracle E-Business Suite</b> for the large companies with a large number of at the same time working users
CRM	+	+	+
Budgeting	+	+	+
Payment calendar	+	+	+
Financial analysis	+	+	+
Production planning	+	+	+
Controlling	+	+	+
Management of production logistics	+	+	+
Personnel management	+	+	+
Payroll calculation	+	+	+
Accounting	+	+	+
Tax accounting	+	+	+
Logistics management	+	+	+
Means of the business analysis	+	+	+
Localization	it is completely localized	only basic modules	only basic modules
Filiality	+	+	+
Scalability	+	+	+

Restriction on quantity of workplaces	any	any	any
Architecture	three	level	three
Setup / programming	configuration	configuration	configuration
Flexibility business processes / regimentation	flexibility, adaptation to business processes of the customer	flexibility, adjustment of parameters of a business model taking into account requirements of the customer	flexibility, adaptation of system to constantly changing working conditions
Cost	cost of one workplace of \$6000	cost of one workplace \$3000	cost of one workplace \$5000
Support cost			\$890 per year
Implementation terms	\$880 per year	\$900 per year	12 months
Support of all functionality by a developer	9 months	1,5 years and more	the developer supports and expands basic functionality of system
Number of consultants	130	70	15
Number of customers	250	100	10

#### 4. Conclusion

Thus, having carried out the comparative analysis of three information systems, the authors came to a conclusion that the German information system SAP/R3 according to the characteristics is ideal for the pharmaceutical company JSC Pharmstandard-UFAVITA.

SAP SE is the German company, software manufacturer for the organizations. The company is engaged in development of automated control systems for such internal processes of the entity as financial accounting, trade, production, finance, personnel management, management of warehouses. Applications can be adapted according to the legal context of a certain country [18,19]. Except for deliveries of the software, the company offers services in its implementation, using for this purpose their own methodology of implementation [20].

The best known product of the company is the ERP system of SAP/R3 oriented to large and medium scale enterprises, developed and sold by the company since the beginning of 1990.

The letter R from R/3 is an initial letter of the word "Realtime" and means immediate posting and updating of data which within integration are immediately available to all interested departments of the entity. Figure 3 means that the architecture client/server applications/database management system (three-unit model) are realized in the system.

The SAP R/3 system contains a set of functional elements in various modules performing function of the Russian localization. It includes interactive reports (for example, the turnover balance sheet in material accounting), printing forms (the invoice, superimposed TORG-12, a packet of standard forms of material accounting (the Receipt order M-4 forms, M-8 "The limit and intaking card", M-15 "A delivery note on issue of materials on the party")) and also functional elements of dialogue transactions. The packet of the Russian localization enters standard delivery as "The functionality specific to the Russian Federation". The packet of the Russian localization is developed and supported by forces of the SAP CIS company [21].

Implementation of the SAP R/3 system will allow JSC Pharmstandard-UFAVITA to solve a number of problems and to optimize considerably the whole process of work, to save essential means, to lower expenses and to increase profitability of the entity.

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